

LESSON
6.6**Practice B**

For use with pages 452–459

Answers**Solve the equation. Check your solution.**

1. $\sqrt{x} + 3 = 12$ 81

2. $x^{1/2} - 4 = 1$ 25

4. $(2x - 3)^{1/2} + 2 = 2$ $\frac{3}{2}$

5. $5\sqrt{3x} = 15$ 3

7. $7 - \sqrt{x - 4} = -6$ 173

8. $\sqrt{3x + 4} + \frac{3}{2} = 3$ $-\frac{7}{12}$

3. $3\sqrt{x + 2} = 6$ 2

6. $3\sqrt{4 - 3x} = 21$ -15

9. $2(x - 1)^{1/2} - 3 = 7$ 26

Solve the equation. Check your solution.

10. $\sqrt[3]{x} + 1 = -2$ -27

11. $4\sqrt[3]{x} + 2 = 0$ $-\frac{1}{8}$

13. $(x + 4)^{1/3} - 2 = -6$ -68

14. $8\sqrt[3]{x} + 3 = 11$ 1

16. $-2\sqrt[3]{2x + 5} + 7 = 15$ $-\frac{69}{2}$

17. $\frac{1}{2}(5x + 1)^{1/3} + \frac{5}{2} = 4$ $\frac{26}{5}$

12. $\sqrt[3]{2x + 7} = 5$ 159

15. $3x^{1/3} - 2 = -4$ $-\frac{8}{27}$

18. $6\sqrt[3]{x - 3} + 2 = \frac{1}{2}$ $\frac{191}{64}$

Solve the equation. Check for extraneous solutions.

19. $x^{5/3} = 243$ 27

20. $x^{3/2} + 3 = 11$ 4

21. $2x^{5/3} = -64$ -8

22. $(x - 2)^{3/4} = 8$ 118

23. $(2x + 12)^{2/3} - 3 = 13$ 26

24. $(3x + 21)^{4/3} + 9 = 90$ 2

Solve the equation. Check for extraneous solutions.

25. $\sqrt{x - 3} = \sqrt{2x - 7}$ 25

26. $\sqrt{x + 3} = \sqrt{4x - 8}$ 4

27. $\sqrt[3]{4x - 9} = \sqrt[3]{2x - 4}$ $\frac{11}{3}$

28. $\sqrt[4]{3x + 3} = \sqrt[4]{2x - 7}$ $\frac{5}{2}$

29. $\sqrt{x + 1} = \sqrt{3x - 3}$ no solution

30. $\sqrt[3]{3x + 9} = \sqrt[3]{x + 6}$ 4

31. $x + 2 = \sqrt{2x + 7}$ $-\frac{3}{2}$

32. $\sqrt{2x + 3} = 1 + \sqrt{x + 1}$ -1, 3

In Exercises 33–35, use the following information.

Velocity The velocity of a free falling object is given by $V = \sqrt{2gh}$ where V is velocity (in meters per second), g is acceleration due to gravity (in meters per second squared), and h is the distance (in meters) the object has fallen. The value of g depends on which body/planet is attracting the object. If an object hits the surface with a velocity of 30 meters per second, from what height was it dropped in each of the following situations?

33. You are on Earth where $g = 9.81 \text{ m/s}^2$. 45.87 m

34. You are on the moon where $g = 1.57 \text{ m/s}^2$. 236.62 m

35. You are on Mars where $g = 3.72 \text{ m/s}^2$. 120.97 m

LESSON
6.6**Practice C**

For use with pages 452–459

*Answers***Solve the equation. Check your solution.**

1. $(2x + 1)^{1/2} - 2 = 2$

$\boxed{\frac{15}{2}}$

2. $9 - \sqrt{x + 4} = 4$

$\boxed{21}$

3. $3\sqrt{4 - 3x} + 5 = 17$

$\boxed{-4}$

4. $\sqrt{x^2 - 9} + 3 = 7$

$\boxed{\pm 5}$

5. $2\sqrt{x^2 - 3} + 3 = 15$

$\boxed{\pm \sqrt{39}}$

6. $(3x^2 - 2)^{1/2} + 4 = 9$

$\boxed{\pm 3}$

Solve the equation. Check your solution.

7. $(x - 2)^{1/3} - 3 = -5$

$\boxed{-6}$

8. $8\sqrt[3]{x} + 7 = 31$

$\boxed{27}$

9. $\sqrt[3]{x + 5} + 2 = 7$

$\boxed{120}$

10. $10 - 3\sqrt[3]{2x + 5} = -11$

$\boxed{169}$

11. $(3x - 2)^{1/3} + \frac{2}{3} = 3$

$\boxed{\frac{397}{81}}$

12. $\sqrt[3]{x^3 + 3} + 1 = 4$

$\boxed{2\sqrt[3]{3}}$

Solve the equation. Check for extraneous solutions.

13. $x^{2/3} = 100$

$\boxed{1000}$

14. $(x + 3)^3 + 6 = -21$

$\boxed{-6}$

15. $3(x - 5)^{3/2} - 6 = 18$

$\boxed{19}$

16. $\frac{1}{2}(x - 3)^{3/4} + 6 = 9$

$\boxed{3 + 6\sqrt[3]{6}}$

17. $(5x + 14)^{2/3} + 10 = 6$

$\boxed{\text{no solution}}$

18. $2(5x^2 + 10)^{2/3} - 5 = 45$

$\boxed{\pm \sqrt{23}}$

Solve the equation. Check for extraneous solutions.

19. $\sqrt{2x - 6} = \sqrt{5x - 15}$

$\boxed{3}$

20. $\sqrt[3]{6x - 5} - \sqrt[3]{3x + 2} = 0$

$\boxed{\frac{7}{3}}$

21. $\sqrt[5]{8x + 11} = \sqrt[5]{5x - 4}$

$\boxed{-5}$

22. $\sqrt{3x + 7} = x + 1$

$\boxed{3}$

23. $\sqrt{x + 3} = \sqrt{x + 4}$

$\boxed{\text{no solution}}$

24. $\sqrt{x - 5} = \sqrt{x - 2}$

$\boxed{\frac{81}{16}}$

25. $\sqrt{x + 9} = 3 - \sqrt{x}$

$\boxed{0}$

26. $\sqrt{x + 3} = 1 + \sqrt{x + 1}$

$\boxed{-\frac{3}{4}}$

27. $\sqrt{x - 7} = \sqrt{x + 1} + 2$

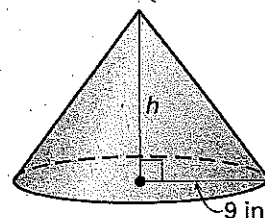
$\boxed{\text{no solution}}$

28. $\sqrt{x + 8} = \sqrt{x} + \sqrt{3}$

$\boxed{\frac{25}{12}}$

29. Geometry The lateral surface area S of a cone is given by

$S = \pi r \sqrt{r^2 + h^2}$ where r is the radius and h is the height of the cone. The surface area of the base B of the cone is given by $B = \pi r^2$ where r is the radius of the cone. The total surface area of a cone with a radius of 9 inches is 216π square inches. What is the height of the cone?

 $\boxed{12 \text{ in}}$ 

30. Geometry A container is to be made in the shape of a cylinder with a conical top. The lateral surface areas of the cylinder S_1 and cone S_2 are $S_1 = 2\pi rh$ and $S_2 = \pi r \sqrt{r^2 + h^2}$ where r is the radius and h is the height of the object. The surface area of the base B of the container is $B = \pi r^2$ where r is the radius of the container. The height of the cone is half the height of the cylinder. The radius of the container is 6 inches and its total surface area is 288π square inches. Find the total height of the container.

 $\boxed{24 \text{ in}}$ 